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Evaluating the Ecological Validity of the Dutch Eating Behavior Questionnaire among Obese Adults using Ecological Momentary Assessment

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Abstract

This study evaluated the ecological validity (i.e., accurate measurement of a construct as experienced in naturalistic settings) of the self-report Dutch Eating Behavior Questionnaire (DEBQ). Obese adults ($N = 50$) completed the DEBQ, followed by a two-week ecological momentary assessment protocol that included measures of eating episodes and associated intrapersonal contextual factors. Results revealed that DEBQ Emotional Eating was associated with greater negative affect and less positive affect at both pre- and post-eating episode, as well as post-eating ratings of feeling driven to eat. DEBQ External Eating was positively associated with pre-eating expectations about enjoying the taste of food, but was unrelated to actual enjoyment reported post-eating; External Eating was positively associated with the post-eating ratings of feeling driven to eat. DEBQ Dietary Restraint was positively associated with pre-eating intentions to eat less to lose/avoid gaining weight. Overall, results provide some support for the ecological validity of the DEBQ.

Keywords

Dutch Eating Behavior Questionnaire; external eating; emotional eating; dietary restraint; ecological validity

The Dutch Eating Behavior Questionnaire (DEBQ; van Strien, Frijters, Bergers, & Defares, 1986) is a widely used measure of three forms of eating patterns: emotional eating, external eating, and restrained eating (also referred to as dietary restraint). The DEBQ was developed from psychosomatic, externality, and restraint theory, and conceptualizes eating patterns as

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trait-like indicators related to overeating and weight gain (van Strien et al., 1986). Emotional eating refers to a person's tendency to eat in response to negative emotional states such as sadness or anxiety. Psychosomatic theory suggests that some individuals have difficulty distinguishing between internal arousal states and hunger, which is associated with eating in response to emotions (Kaplan & Kaplan, 1957). Further, external eating involves eating in response to external cues such as the aroma of food, presence of food, or watching others eat. Externality theory describes external eating as eating in response to food-related stimuli, regardless of hunger or satiety (Schachter, Goldman & Gordon, 1968). Finally, restraint theory posits the role of restrained eating (i.e., cognitive attempts to control eating, such as the amount or type of food consumed, often with the intention of controlling weight) in overeating (Herman & Mack, 1975). Restrained eating differs from objective food restriction in that the former involves cognitive attempts to limit food intake regardless of whether or not behavioral efforts are successful. Notably, studies have consistently demonstrated that measures of cognitive restraint do not correlate with objective caloric intake (Stice, Cooper, Schoeller, Tappe, & Lowe, 2007; Stice, Fisher, & Lowe, 2004), but are associated with maladaptive eating patterns such as binge eating (e.g., Stice, 2001).

The External Eating, Emotional Eating, and Dietary Restraint subscales of the DEBQ are associated with maladaptive eating behaviors (e.g., binge eating; Davis, Levitan, Smith, Tweed, & Curtis, 2006; Mason & Lewis, 2014), higher body mass index (BMI; Davis et al., 2006; Mason & Lewis, 2014), and negative emotional states (Ouwens, van Strien, & van Leeuwe, 2009), evidencing the utility of the DEBQ for clinical research. Cross-sectional investigations have demonstrated the reliability and validity of the three DEBQ subscales in English as well as several other languages (Bozan, Bas, & Asci, 2011; Cebolla, Barrada, van Strien, Oliver, & Baños, 2014; Dakanalis et al., 2013; van Strien, Frijters, Bergers, & Defares, 1986). However, the ecological validity of the DEBQ and its subscales requires further evaluation.

Ecological validity in psychometrics refers to the extent to which a scale accurately measures the construct in a way that it is reflected or experienced in daily life (Stone & Shiffman, 2010). Self-report measures often ask individuals to report on their previous experiences, although the extent to which these self-reported data accurately reflect real world experiences is sometimes unclear. Self-report measures are subject to a number of cognitive recall biases that threaten the ecological validity of the measure. These include recency bias (i.e., recent events are more easily remembered), saliency (i.e., salient events are more easily recalled), effort after meaning (i.e., tendency to reconstruct the memory of events so that they are consistent with subsequent events), and aggregation of events (i.e., all experiences are measures with a single question/item) (Yoshiuchi, Yamamoto, & Akabayashi, 2008). Demonstrating the ecological validity of self-report measures is thus essential to ensuring that these measures reflect naturalistic experiences in the "real world" environment. In particular, scales that demonstrate ecological validity may have greater utility in clinical research, as well as prevention and intervention efforts. For example, an individual might report on a questionnaire that they tend to eat in response to negative emotions, suggesting the utility of certain treatment targets (e.g., emotion regulation); but if that is not true of their actual real world experience, a focus on alternative treatment targets might be preferable. Further, accurate representation of naturalistic experiences is of

importance to understanding the functional nature and maintenance of maladaptive behaviors, particularly with regard to momentary maintenance mechanisms.

Laboratory-based studies that have examined associations between the DEBQ and actual eating behavior have produced mixed results. One study found that individuals who scored higher on the Emotional Eating scale of the DEBQ consumed more food after a negative versus positive mood induction (van Strien et al., 2013). In addition, a functional neuroimaging study demonstrated that the Emotional Eating subscale was associated with individual differences in reward response during negative moods (Bohon, Stice, & Spoor, 2009). Conversely, results from a series of experiments suggest that emotional eaters (classified based on the DEBQ) did not demonstrate increased consumption of food after negative mood induction (Evers, de Ridder, & Adriaanse, 2009).

Two laboratory studies testing the construct validity of the External Eating subscale also produced conflicting results. In the first study, Jansen et al. (2001) exposed participants to food cues and then measured intake under the guise of a taste test; scores on the External Eating subscale were not related to food intake. In contrast, van Strien, Herman, and Anschutz (2012) conducted a study in which participants' food consumption was measured after watching a film with either food commercials or neutral commercials. Among individuals scoring high in external eating, those in the food commercial condition consumed more food than those in the neutral commercial condition. Of note, laboratory studies of the DEBQ's validity have mainly focused on the External Eating and Emotional Eating subscales, thus data regarding the validity of the Dietary Restraint subscale are needed. Despite the benefits of laboratory paradigms (e.g., controlled setting), establishing the validity of a self-report measure with respect to its prediction of real-world experiences outside the laboratory is critical. Indeed, Domoff, Meers, Koball, and Musher-Eizenman (2014) advocated moving beyond laboratory studies to evaluate the validity of the DEBQ.

Ecological momentary assessment (EMA) is a methodology that involves collecting real-time data in a person's natural environment. In EMA protocols, participants can receive signals throughout the day that prompt them to complete measures of current thoughts, experiences, and behaviors. Participants can also be instructed to complete ratings when certain events occur, or at specified times of the day. Such protocols typically range from several days to several weeks. Using an EMA approach, researchers can examine behavioral experiences closer in time to their occurrence, reducing bias associated with retrospective recall, as well as being able to more fully evaluate the nature of relationships between variables due to the documented temporal relationship between recordings. EMA is particularly useful for evaluating the ecological validity of self-report measures because it allows for the examination of associations between the measure and validators in an individual's naturalistic environment in real time. This is important given the limitations of self-report scales, notably retrospective recall biases. Previous research has found that comparable self-report measures and EMA indices are not always related (e.g., Solhan, Trull, Jahng, & Wood, 2009).

In the current study, EMA was used in a sample of obese adults to examine intrapersonal contextual factors associated with eating episodes. The current study is the first study to

examine the correspondence of scores on the DEBQ subscales and related variables in individuals' daily environment in real time. In contrast to studies that have examined DEBQ subscales in relation to amount of food consumed, this study investigated how DEBQ subscales were associated with characteristics of recorded eating episodes. This focus allowed for an examination of the extent to which DEBQ subscales are related to characteristics of eating more generally, rather than just overeating. Intrapersonal contextual variables, which were assessed via EMA both prior to and following eating episodes, included emotional states, expectations, cognitions, and motivations. These specific items were selected for several reasons, including their clinical relevance with respect to understanding eating among obese adults, as well the degree to which they theoretically overlap with the DEBQ subscales.

It was hypothesized that the ecological validity of each of the three DEBQ subscales would be supported, as indicated by significant associations between the subscales and corresponding pre- and post-eating EMA items. There is not an extensive literature on how the DEBQ relates to pre- and post-eating intrapersonal eating characteristics. As such, we generally proposed similar hypotheses for both pre- and post-eating episode ratings. Given that the Emotional Eating subscale of the DEBQ was designed to assess eating due to negative emotions (van Strien et al., 1986), we hypothesized that DEBQ Emotional Eating would be associated with increased between-person negative affect before and after eating, and less between-person positive affect before and after eating. Externality theory describes external eating as eating in response to food-related stimuli including sight and smell of food as well as seeing other eating (Schachter, Goldman & Gordon, 1968). Thus, we hypothesized that DEBQ External Eating would be positively associated with momentary ratings of hedonic (i.e., taste) and social (i.e., eating because others are eating) aspects of food consumption before and after eating as well as greater positive affect before and after eating. Our hypothesis suggests that the perceived taste of food and positive affect surrounding eating are important underlying reasons why external eaters may consume food due to sight and smell. Also, we hypothesized that DEBQ Emotional Eating and External Eating would be associated with feeling driven to eat following eating episodes given that emotional and external eating involve disinhibited, non-hunger driven eating (Kaplan & Kaplan, 1957). Finally, given that the Restraint subscale of the DEBQ assesses intentions to consume less food (van Strien et al., 1986), it was hypothesized that DEBQ Dietary Restraint would be associated with greater intention to eat less and feeling that one should not eat a lot of food before eating, as well as greater regret about eating after eating.

Method

Participants and Procedure

Participants included in this study were 50 obese (body mass index [BMI] ≥ 30) men and women from the Midwestern U.S. that were recruited through advertisements and flyers. The mean BMI of the sample was 40.3 kg/m^2 (*SD* = 8.5). Most participants were women (n = 42; 84%) and White (n = 38; 76%). Based on the Structured Clinical Interview for DSM-IV-TR, 12 participants had a lifetime diagnosis of binge eating disorder (BED; 5 subthreshold and 7 full threshold); nine of these 12 participants also had a current diagnosis

of BED (4 subthreshold and 5 full threshold). Exclusion criteria included previous gastrointestinal surgery, current pregnancy or breastfeeding, concurrent treatment of obesity, inability to read and understand English, and current or past diagnosis of anorexia nervosa (AN) or bulimia nervosa (BN). We excluded individuals with a history of AN and BN in order to reduce bias that might be introduced by individuals with these forms of prior eating disorder psychopathology, particularly for individuals in partial remission. However, given the substantial overlap between binge eating and obesity, individuals with binge eating disorder, current or past, were not excluded. This study was approved by the appropriate Institutional Review Board.

Interested participants were screened for inclusion and exclusion criteria via phone and eligible participants attended an informational meeting where they received information about the study. When participants entered the study, they provided written informed consent. Participants completed a baseline assessment, including the DEBQ, and anthropometric measurements, after which they received instructions regarding completion of EMA recordings on supplementary palmtop devices using Satellite Forms. Participants subsequently completed two practice EMA days, then returned to the research lab to have practice data reviewed and receive feedback regarding compliance rates. These data were not used in analyses. For the next two weeks, they completed EMA measures.

Participants were instructed to complete EMA assessments prior to and following each eating episode (i.e., any time they consumed food, regardless of whether it was a meal, snack, overeating episode). Participants also provided reports in response to six semi-random prompts occurring every 2–3 hours between 8:00am and 10:00pm, in which participants were given the opportunity to record recent eating episodes that they had not previously recorded. During the two-week protocol, one in-person visit was scheduled for each participant, during which data from the palmtop computers were uploaded and participants were provided feedback regarding their compliance rates. Participants received $150 for their participation and were given a $50 bonus for completing at least 90% of EMA reports within 45 minutes of the palmtop signal.

Measures

Dutch Eating Behaviors Questionnaire (van Strien et al., 1986).—The DEBQ assesses emotional eating, external eating, and dietary restraint. Participants respond to items using a scale ranging from 1 *(never)* to 5 *(very often)*. The Emotional Eating subscale includes nine items (e.g., “Do you have a desire to eat when you are irritated?”). The External Eating subscale includes 10 items (e.g., “If food tastes good to you, do you eat more than usual?”). The Dietary Restraint subscale includes 10 items (e.g., “Do you try to eat less at mealtimes than you would like to eat?”). Initial reliability and validity is provided by van Strien et al. (1986). In the current study, Cronbach’s alpha was .97 for the Emotional Eating subscale, .86 for the External Eating subscale, and .91 for the Dietary Restraint subscale.

Pre- and Post-Eating EMA items.—Many of the pre- and post-eating EMA items were adapted from existing self-report/interview measures (e.g., Eating Disorder Examination).

Participants provided responses to several items immediately before and after each eating episode. During pre-episode recordings, participants rated several items on a Likert scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*), including: "I am eating because others are eating," "I will enjoy the taste of this food," I shouldn't eat this," and "I will eat less to lose weight or to avoid gaining weight."

During post-episode recordings, participants rated several items on a Likert scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*), including: "I ate because others were eating," "I enjoyed taste of the food," I shouldn't have eaten what I ate" and "I wish I had eaten less." They also indicated the extent to which they felt "driven or compelled to eat" during the rated eating episode on a scale from 1 (*not at all*) to 5 (*extremely*). Finally, participants also completed items from the Positive and Negative Affect Schedule-Expanded Form (PANAS-X; Watson & Clark, 1994) before and after eating episodes. Thirteen items were used to assess positive affect (i.e., happy, alert, proud, cheerful, enthusiastic, confident, concentrating, energetic, calm, strong, determined, attentive, and relaxed) and 11 items were used to assess negative affect (i.e., afraid, lonely, irritable, ashamed, disgusted, nervous, dissatisfied with self, jittery, sad, distressed, and angry with self). Participants rated the intensity of each emotional state at the current moment on a 5-point scale from 1 (*Not at all*) to 5 (*Extremely*). The alphas for positive and negative affect were .92 and .91, respectively.

Statistical Analyses

Pearson correlations were used to examine the extent to which self-reported Emotional Eating, External Eating, and Dietary Restraint were associated with one another. Generalized estimating equations (GEEs) with a gamma function appropriate for skewed data were calculated using SPSS version 22.0. GEEs account for non-independence of observations in the data, accommodate data with missing time points, and are particularly useful with non-normal data (Schwartz & Stone, 1998). An AR1 serial autocorrelation correction was used to account for dependence within the nested data (Schwartz & Stone, 1998). EMA items were used as the dependent variable and DEBQ subscales were used as the independent variables. Emotional Eating, External Eating, and Dietary Restraint from the DEBQ were used as simultaneous predictors in each model. The DEBQ subscales were grand-mean centered.

Results

A total of 92% of participants completed the two-week protocol, with the remaining 8% terminating early due to personal circumstances or perceived burden of completing EMA recordings. All participants were included in study analyses. Participants completed an average of 13.90 (SD=2.50) days of EMA recordings, including an average of 68.50 (SD=26.00) recordings prior to or subsequent to eating, over the two-week study period. Twenty-two participants (44%) earned the compliance bonus for completing at least 90% of EMA reports within 45 minutes of the palmtop signal. Of the individuals who did not receive the compliance bonus, approximately 72% of recordings were completed. There were 1,709 pre-eating episode recordings and 1,715 post-eating episode recordings. The mean number of pre-eating episode recordings over the course of the EMA protocol was

34.18 (*SD* = 14.19; Range = 5 – 63) and the mean number of post-eating episode recordings was 34.30 (*SD* = 13.01; Range = 0 – 63). The potential for reactivity (i.e., did completing measures repeatedly lead to change in the measured items) was evaluated by examining whether study variables (including affect and other contextual variables) differed in the first and second week of the study. Consistent with other studies (e.g., Stein & Corte, 2003), we generally found no differences between the two weeks on study variables. Two exceptions were that, in Week 2, participants felt less "driven to eat" and reported more "eating while others were eating".

A significant positive association ($r = .38$, $p < .01$) was found between DEBQ Emotional Eating ($M = 40.33$, $SD = 14.44$) and DEBQ External Eating ($M = 32.38$, $SD = 6.96$). DEBQ Dietary Restraint ($M = 26.65$, $SD = 8.42$) was not significantly associated with either DEBQ Emotional Eating or External Eating ($ps > .05$). The between- and within-person correlations among the EMA contextual factors are displayed in Table 1 (pre-eating episode variables) and Table 2 (post-eating episode variables). Results of GEEs for pre-eating episodes are displayed in Table 3, and results of GEEs for post-eating episodes are displayed in Table 4.

DEBQ Emotional Eating

DEBQ Emotional Eating was associated with increased negative affect and less positive affect at both pre- and post- eating episode ratings and was also associated with feeling driven to eat at post-eating ratings.

DEBQ External Eating

DEBQ External Eating was associated with increased expectation about enjoying the taste of food before eating, but was unrelated to actual reported enjoyment at post-eating episode rating. Contrary to predictions, DEBQ External Eating was unrelated to the EMA items assessing eating because others were eating at pre- and post-eating ratings. DEBQ External Eating was also related to feeling driven to eat at post-eating ratings.

DEBQ Dietary Restraint

DEBQ Dietary Restraint was associated with increased positive affect at pre-eating and post-eating ratings and was unrelated to negative affect. DEBQ Dietary Restraint was also related to higher endorsement of eating less to lose weight or to avoid gaining weight in the pre-eating ratings. DEBQ Dietary Restraint was unrelated to ratings that one should not eat a food at pre-eating episode or ratings of guilt over eating (i.e., feeling that one should not have eaten what they ate or wishing one would have eaten less) at post-episode ratings. Finally, DEBQ Dietary Restraint was related to higher enjoyment of the taste of the food at post-eating episode.

Discussion

The results of the present study provide some support for the ecological validity of the DEBQ. Consistent with our hypothesis, the Emotional Eating subscale of the DEBQ was also associated with more negative affect and less positive affect *before* eating occurred in the natural environment. This finding is consistent with laboratory studies that found

increases in DEBQ Emotional Eating (Bekker, van de Meerendonk, & Mollerus, 2004) and food consumption (van Strien et al., 2013) after negative mood induction. Additionally, the current finding that higher DEBQ Emotional Eating scores were associated with more negative affect and less positive affect *after* eating is consistent with prior evidence indicating that emotional eating urges are associated with increased negative affect (Haedt-Matt et al., 2014). In addition, DEBQ Emotional Eating was associated with feeling driven to eat in daily life, demonstrating that this subscale appears to be measuring externally-driven, disinhibited eating.

The DEBQ External Eating subscale was associated with greater pre-episode expectations about enjoying the taste of food, but not actual post-episode enjoyment of the food. This finding suggests that the DEBQ External Eating subscale is assessing the extent to which individuals are attracted to foods' external properties (e.g., palatable appearance or aroma) because they believe they will enjoy them, but that this expectation does not always translate to their actual experience of enjoyment of food consumption. Because DEBQ External Eating was not related to eating or having eaten because others were eating, others' food consumption may not be as related to the concept of external eating as much as the actual properties of food. Overall, our findings are consistent with van Strien et al.'s (2012) support of the ecological validity of the DEBQ External Eating subscale, and further suggest that this subscale appears to be assessing tendencies to eat due to anticipated enjoyment of the taste of foods. Supporting our hypothesis, DEBQ External Eating was associated with feeling driven to eat in daily life. Thus, similar to DEBQ Emotional Eating, this subscale appears to effectively assess externally-driven, disinhibited eating in the natural environment.

With regard to the DEBQ Dietary Restraint subscale, results revealed that scores were positively associated with pre-episode ratings of intention to eat less to lose weight or to avoid gaining weight. Thus, before eating episodes, those high in DEBQ Dietary Restraint appeared to consider their weight in their intentions related to eating. However, our data do not allow us to determine if individuals actually did eat less during these episodes. Although not hypothesized, results of the current study also revealed that higher DEBQ Dietary Restraint was related to higher positive affect pre- and post-eating episode, as well as greater enjoyment of the taste of the food as rated post-episode (but not pre-episode). One potential explanation for these findings is that highly restrained individuals may be restricting their intake, experience more positive affect when anticipating eating and after eating, and perceive the taste of the food of more enjoyable. However, studies have shown that dietary restraint is not related to caloric intake or restriction (Stice et al., 2007; Stice et al., 2004). Therefore, even if actual eating behavior does not correspond to intentions to restrict, the belief that one has restricted, or at least attempted to restrict, may be sufficient to result in the positive affective experiences observed in these findings. Consistent with this possibility, the DEBQ Dietary Restraint subscale has been associated with underreporting of dietary consumption (Vansant & Hulens, 2006). Results also showed that DEBQ Dietary Restraint was unrelated to feeling that one should not eat a food at pre-eating ratings, as well as to regret about eating at post-eating ratings. As such, the Dietary Restraint subscale of the DEBQ does not appear to be sensitive to foods that individuals may have been eating. That is, individuals high in dietary restraint who consumed foods that they considered healthy

would likely not feel regret about consumption. Conversely, individuals who consumed food that they considered unhealthy would likely feel more regret about consumption.

Cross-sectional and laboratory designs have typically been used to assess the validity of the DEBQ. This study offers evidence for the validity of the DEBQ using real-time, naturalistic data collected for heterogeneous eating episodes (e.g., meals and snacks of varying size and composition) among obese adults. Another strength of the current investigation was the collection of data both before and after eating episodes, allowing for an examination of associations with contextual factors both pre- and post-eating. However, given the complexity of assessing real-world eating behavior, certain limitations must be noted. In particular, the between-subjects sample size was modest and may have limited the ability to detect smaller effects. Additionally, this study did not examine the specific food or caloric content of eating episodes. Future investigations should evaluate contextual variables that may vary as function of food types (e.g., “comfort” foods, highly palatable foods) and the relationship of these variables with the DEBQ scales. Furthermore, it is likely that participants did not record some eating episodes that occurred during the EMA protocol, and additionally, they may not have reported eating episodes in a timely fashion. Thus, we cannot be certain that the eating episodes that were reported were fully representative of all actual episodes of eating.

An important factor to consider when designing and implementing EMA studies is participant burden. Because participants complete multiple assessments over the course of the day, measures must be brief, often only including one or two items to assess each construct. In addition, it is common for EMA studies to adapt these items from established self-report measures or to create new momentary items. Thus, momentary items typically have less established support for validity. As such, while our EMA validator items assessed numerous aspects of the DEBQ constructs, we were not able to measure every aspect (e.g., sight and smell of food for external eating). Additionally, although this study was theoretically driven, it is possible that some of the findings reflect Type 1 error. Finally, this study used a sample of obese adults; thus, these results may not be generalizable to normal weight adults. Individuals with a history of AN and BN symptoms were also excluded from this study, and it is unclear if the greater heterogeneity resulting from inclusion of such individuals would produce different findings. For example, among obese individuals with BED, those with a history of AN or BN had higher rates of mood disorders and eating disorder symptoms (Utzinger et al., 2015). More research is needed to determine the extent to which the DEBQ is ecologically valid in normal weight adults and other populations (e.g., children and adolescents, adults with various eating disorder histories)..

In sum, the overall results of the current study using EMA data lend some support for the ecological validity of the DEBQ in a sample of obese adults. The strongest support was found for the DEBQ Emotional Eating subscale, with all hypotheses being supported. There was not support for the association between DEBQ External Eating scores and EMA self-reported eating because others were eating. However, findings did suggest that those high in external eating were more likely to have high expectations for enjoyment of taste. Thus, perceived enjoyment of taste may be associated with external eating. The most inconsistent results were found for DEBQ Dietary Restraint, which was associated with intentions to eat

less at pre-eating episode, but was not related to guilt about eating at post-eating episodes. However, this finding may be due to a limitation of the current study, as we cannot be sure if people were actually successful at limiting their food intake. Given our findings, the DEBQ may be a useful clinical tool to assess emotional, external, and restrained eating experiences. Given the nature of the current sample (i.e., primarily Caucasian women), research is needed evaluate the ecological validity of the DEBQ among other relevant populations, including children/adolescents, ethnic minorities, males, and individuals with eating disorders.

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Table 1.

Correlations among EMA Pre-Eating Episode Variables

	1	2	3	4	5	6
1. Negative affect	-	−.06	−.10	.004	.37**	−.10
2. Positive affect	−.25***	-	.11	−.07	−.28*	.34**
3. Will enjoy taste	−.03	.11**	-	−.07	−.24	.31*
4. Others are eating	−.03	.12**	.09*	-	.24	−.05
5. Shouldn't eat this	.08**	−.06	−.003	.07*	-	-.01
6. Will eat less	.01	.06	−.13**	−.04	−.08*	-

Note. Between-person correlations are reported above the diagonal. Within-person correlations are reported below the diagonal.

*** $p < 0.001$,

** $p < 0.01$,

* $p < 0.05$

Table 2.

Correlations among EMA Post-Eating Episode Variables

	1	2	3	4	5	6	7
1. Negative affect	-	−.09	−.17	.001	.51***	.47***	.56***
2. Positive affect	−.23***	-	.17	−.10	−.38**	−.34*	−.01
3. Enjoyed taste	−.03	.14***	-	−.07	−.21	−.25	.18
4. Others are eating	−.03	.07	.09*	-	.22	.26	.08
5. Shouldn't eat what I ate	.18***	−.11**	.05	.13***	-	.83***	.41**
6. Wish I had eaten less	.18***	−.08*	.14***	.14***	.46***	-	.38**
7. Driven to eat	.17**	−.07	.14***	.06	.16***	.22***	-

Note. Between-person correlations are reported above the diagonal. Within-person correlations are reported below the diagonal.

*** $p < 0.001$,

** $p < 0.01$,

* $p < 0.05$

Table 3.

DEBQ Subscales and Pre-Eating Episode EMA Items

Variable DEBQ	**EMA Negative Affect**			**EMA Positive Affect**			**EMA Will Enjoy taste**		
	Estimate	***SE***	***p***	***Estimate***	***SE***	***p***	***Estimate***	***SE***	***p***
External	.002	.004	.671	−.006	.004	.173	.006	.003	.015
Emotional	.013	.003	<.001	−.004	.002	.028	−.001	.001	.545
Restraint	.001	.004	.829	.010	.004	.009	.003	.002	.101
Variable DEBQ	EMA Others are eating			EMA Shouldn't eat this			EMA Will eat less		
	Estimate	*SE*	*p*	*Estimate*	*SE*	*p*	*Estimate*	*SE*	*p*
External	−003	.009	.730	.007	.005	.160	−.004	.009	.672
Emotional	.006	.005	.195	.001	.003	.677	−.003	.003	.402
Restraint	.002	,010	.862	.000	.006	.988	.030	.006	<.001

Table 4.

DEBQ Subscales and Post-Eating Episode EMA Items

Variable DEBQ	**EMA Negative Affect**			**EMA Positive Affect**			**EMA Enjoyed taste**			**EMA Others are eating**		
	Estimate	***SE***	***p***	***Estimate***	***SE***	***p***	***Estimate***	***SE***	***p***	***Estimate***	***SE***	***P***
External	.001	.004	.808	−.007	.004	.111	.004	.003	.108	−.003	.008	.726
Emotional	.012	.003	<.001	−.005	.002	.003	.000	.001	.989	.007	.004	.074
Restraint	−.001	.004	.801	.011	.003	.002	.006	.002	.008	−.001	.009	.902
Variable DEBQ	EMA Shouldn't have eaten what I ate			EMA Wish I had eaten less			EMA Driven to eat					
	Estimate	*SE*	*p*	*Estimate*	*SE*	*p*	*Estimate*	*SE*	*p*			
External	.008	.005	.131	.007	.005	.175	.025	.007	<.001			
Emotional	.004	.003	.098	.003	.002	.121	.009	.004	.004			
Restraint	−.009	.006	.110	−.005	.005	.526	−.009	.006	.133			